

METHOD AND APPARATUS FOR PATH SELECTION  
AND WAVELENGTH ASSIGNMENT IN AN OPTICAL NETWORK

ABSTRACT OF THE DISCLOSURE

5           A method and apparatus for determining a shortest path between a source node  
and a destination node in an optical network of nodes interconnected with optical  
transmission links is disclosed. A wavelength graph is used to represent an optical  
network as a set of electronic nodes and optical channel nodes corresponding to the  
network nodes with a set of internal links and optical channel links. The electronic node  
10 represents the electronic switching fabric that interconnects OEO equipment within a  
physical node. A single-source shortest path algorithm (e.g., Dijkstra's algorithm) is  
applied to the wavelength graph to determine a shortest path. The transformation of the  
network representation to include the electronic node greatly reduces the number of  
links in the wavelength graph and significantly increases the computational efficiency.

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